

Basel

tension of the elastic tie-members for creating a new position for the body and limbs of a patient being closer to the physiological parameters and providing a possibility for performing movements by the patient with an amplitude close to the maximum for a given patient.

REMARKS

At the outset, the Applicants wish to express their appreciation to the Patent Examiner for the helpful suggestions pertaining to formal matters in the present patent application. For this reason, a new set of drawings encompassing FIGS. 1-3 is being filed herewith so as to overcome the objection by the Patent Office Draftsperson to the drawings. In addition, the specification is being amended on pages 2, 8, 9 and 10 in order to comply with the Examiner's suggestions. Specifically on page 2, a typographical error has been corrected. From page 8, line 26, through page 10, line 13, all of this subject matter is being canceled. Page 6 of the specification has been amended to describe the operation of structure shown in the drawings and defined in the original disclosure.

Also, with respect to the claims, originally filed claims 1-3 are being canceled without prejudice and are being rewritten as new claims 4-6. These claims 4-6 overcome the Examiner's formal

objections to originally filed claims 1-3.

Reconsideration and withdrawal are respectfully requested for the rejection of the specification as failing to provide an adequate written disclosure of the invention.

It is firmly believed that a sufficient disclosure has been provided by the originally filed specification and drawings. However, for the purpose of explanation only, the following discussion is now provided.

According to the text of the description on page 6, lines 4 through 7, the bands 4, and the lock 5 are used as means for adjustment of the elastic tie-members 3.

One end of the band 4 is connected with the respective tie member 2, while the opposite end of the band 4 is secured in the lock 5 installed in one of said supports 1.

When the elastic tie-members are extended, the means for tensioning the elastic tie members (in the form of the band 4) are shortened, i.e. the length of a section between the elastic tie-member 2 and the lock 5 is reduced.

The lock 5 is essentially a buckle comprising a square

framing which internally accommodates a floating crossbar. The means for adjusting the tension of the elastic tie-members 3 made in the form of the band 4 is passed over the floating crossbar so that the end of the band 4 is disposed between the floating crossbar and one of the sides of the lock 5. In this case, when one end of the band 4 is pulled, the latter freely runs out of the lock 5, while a portion of the band 4 disposed at the opposite side of the lock 5 is shortened due to which of the elastic tie-members 2 are tensioned.

When the pulling force is applied to a central portion of the band 4 which takes place when the elastic tie-members are in the working position during treatment of a patient, the floating crossbar is shifted in the lock right up to the elastic tie-member 2 due to which the band 4 is firmly clamped and fixed. The bands 4 secured in the lock 5 are held therein both before and after the tensioning of the elastic tie-members 2.

With regard to the formal rejection of the claims, the Applicants also cannot agree with the statement that the feature described in claim 1 "... elastic tie-members (2) adapted for being placed on the surface of the patient's body so as to follow anatomical arrangement of the skeletal muscles..." is too broad and indefinite.

Further comments regarding this formal rejection are as follows. According to the present specification on page 5, lines 33-34, and on page 6, line 1 ... "The elastic tie-members 2 are so connected to the supports 1 that they are arranged on the surface of the patient's body in antagonistic pairs to follow the anatomical arrangement of the skeletal muscles." The inventive feature of the arrangement of the elastic tie-members resides in that each elastic tie-member has its own antipode, i.e. the elastic tie-members arranged on the rear surface of the trunk and effecting its extension are provided with antipodes, i.e. the elastic tie-members arranged on the front surface of the trunk and limbs effecting the flexure of the trunk.

Thus, these elastic tie-members are arranged on the trunk of patients to the right and to the left relatively to the spine, while the zone of their action expands from the upper thoracic vertebrae and up to the pelvic girdle.

It should be noted that the elastic tie-members disposed on the back imitate the trapezoid muscles (musculus trapezius), the bandage of the neck (musculus splenius colli), the spine erectors (musculi erector spinae) and the elastic tie-members disposed on the chest imitate the scalene muscles (musculus scalenus), the front and medium (musculi scaienus anterior, medius), the long muscle of the neck (musculus longus colli) and also the straight

muscle of the thigh (musculus rectus femoris).

The arrangement of the elastic tie-members on the human limbs also imitates the anatomic arrangement, i.e. the symmetry in the arrangement of the elastic tie-members (flexors and extensors) on the front and rear and (rotators) on the side surface, and on the section from the pelvic girdle to the feet the use is made of poliarticular principle.

For example, the elastic tie-member running from the pelvic girdle along the front surface of the thigh up to the knee support imitates the direction of the thigh straightening muscle and also imitates the action (work) thereof, i.e. flexes the thigh and extends the shin.

For all the above reasons, it is firmly believed that each of the drawings, the specification, and the claims are now in complete compliance with the requirements of 35 U.S.C. 112. Withdrawal of this ground of rejection is respectfully requested.

The Applicants comment upon the prior art rejections of the claims as follows.

Before filing this patent application, the International Preliminary Examination Authority conducted search and information

retrieval in order to determine if there were technical solutions disclosed in the known prior art in the field of a nonsurgical treatment of the locomotor system of patients with disturbed posture and motor activity and suffering from various neurological diseases. This prior art was taken into consideration before filing the present patent application.

The information in the prior art preceding the present invention has been presented in the description and copies of the publications (category A) found during the search for the invention have been appended to the application filed in the U.S. PTO for a patent.

The prior art references cited by the Examiner who used these references in rejecting the claims of this patent application do not represent the field of the invention and do not recognize the problem to be solved by the claimed invention. Besides the references cited do not disclose the combination of essential features of the claimed invention which succeeds where the prior art has failed.

The cited references represent the state of art in other fields of application for various devices mainly for sports exercises in walking, running, jumping, hydrogymnastics, aerobics, etc. The main application of these devices is in the field of

muscle training.

For example: *Davidson* U.S. Patent No. 1,618,273. This prior art construction is essentially a device of an expander type designed for exercises of the whole body. This device comprises an abdominal belt and a chest band, foot pieces, hand pieces and a head piece. Elastic members are provided in a limited number only on the back side. Besides, all the elastic members are unpaired and obviously they operate only in the process of exercises when the hand pieces are grasped and the arms are being extended. This device is used for exercises by sportsmen and other persons engaged in the muscle training for running, walking, etc.

The *Marshman* U.S. Patent No. 2,097,376, is a prior art construction which comprises a waist belt, a chest strap, shoulder straps, toe and heel coverages. Elastic members of the construction are used only for feet (one at the front and one at the rear). The elastic members for hands are essentially expanders which are not arranged on the body surface and the grips of the expanders are held in the palm for the time of exercises. Connections between the waist belt and the chest straps are not elastic. On the trunk the elastic members are replaced with belts. The construction is designed for muscle training.

The *Karlik* U.S. Patent No. 3,162,442, is a prior art

construction which comprises the pelvic and pedal supports of which the pelvic support is used for securing the frame to the trunk of a patient, elastic members running from the pedal supports are passed through the pulleys secured to the frame and the elastic members are so interconnected that the elastic member running from the left foot is passed through the pulley and is returned to the right foot. There are also provided such supporting members as a shoulder belt, stirrups and two belts for securing the frame to the trunk of a person.

It should be noted that the elastic members of said construction are arranged on the frame but not on the trunk of a person and make up a unified adjustable system for extension of a leg. This construction is designed for exercises performed by a user floating in water or for hydrogymnastics.

The Malloy U.S. Patent No, 4,910,802, is a suit which comprises elastic bands positioned within the suit conduits and has supporting members for feet and hands. Unpaired elastic bands are arranged at the front of the trunk, on the front and side surfaces of the legs and on the side surfaces of arms. The suit is designed for muscle training.

The Yagn U.S. Patent No. 420,178 is a prior art construction which is based on two bow-strings the ends of which

are fastened by means of two arm rings to the shoulders and to the shoes. Knee-straps are neither supporting nor power elements and serve only as rings for passing the chains to prevent their becoming tangled. The braces provided between the waist belt and the chest and back bands are not elastic and serve for transmitting the force of the bow-springs to the body. All the elastic members secured to the side of the body of a patient are designed for the bow-springs and operate in case of the construction failure. Thus, the force acting on the body of a patient extends the spine. The construction is designed to facilitate jumps and running in case of any difficulties.

The Wilkinson U.S. Patent No. 5,186,701, is very limited in disclosure, and discloses no more than that already discussed above for the other prior art references.

The material distinctive features of the claimed invention which differ from the known prior art features reside in that a device for treatment of patients with disturbed posture and motor activity comprises pelvic and foot supports, as well as the shoulder, knee, elbow, hand and finger supports. In addition, the elastic tie-members are arranged on the surface of the body of a patient with due regard to anatomic arrangement of the skeletal muscles and in antagonistic pairs relative to the joints, each elastic tie-member being connected with two supports.

Arrangement of the elastic tie-members on the surface of the patient body in a required position promote, and do not prevent flexure, extension, rotation and abduction of the limbs, as well as movements of the patient trunk.

Thus, the paired elastic tie-members arranged necessarily on the front and rear surfaces of the trunk and limbs of a patient and operating on the flexor-extensor principle are presented only in the claimed device. Each elastic tie-member operates individually or exerts an effect on the antagonist thereof.

In addition, the claimed device is provided with means made in the form of bands for adjusting the tension of the elastic tie-members and a lock installed on one of respective supports, one end of the adjusting means being connected with a respective tie-member while the opposite end of the adjusting means is secured in the lock and is used for fixing the degree of tension in the respective tie-members. Tension of the elastic tie-members is adjusted through the medium of said means with the aim of setting the body and limbs of a patient in a new position close to normal physiological parameters and for providing a possibility of performing movements by the patient with an amplitude close to a maximum for a given patient. The primary objective of the claimed device resides in correcting the position of the trunk and limbs relative to one another with the body of a patient in a static

position and in motion, as well as for creating a normal physiological response for posture and movements which present the principal object of the claimed invention.

It is another object of the claimed device to provide for a nonsurgical treatment of the locomotor system of patients with disturbed posture and motor activity caused by neurological diseases. The field of application of the invention is limited.

The present invention achieves non-obvious results by correction of the locomotor system and energy-loading of movements of the patient trunk and limbs in a new position which resulted in activation of the brain central structures in elaborating a new organization of the system for controlling both the locomotorium and the motor system for controlling both the locomotorium and the motor system of the speech formation which makes it possible to treat patients suffering from an infantile cerebral paralysis (ICP), as well as from the disturbed locomotion after a cerebral insultus and some other diseases.

Based upon the comments set forth above, it is respectfully submitted that none of prior art references are analogous to the claimed invention, and thus are not available for rejections of the claims by the Patent Examiner.

For all of the reasons set forth above, none of the prior art references provide an identical disclosure of the claimed invention. Hence, the present invention is not anticipated under 35 U.S.C. 102. Withdrawal of this ground of rejection is respectfully requested.

In conclusion, the Applicants believe that the device for treatment of patients with disturbed posture and motor activity, as defined by the amended claims, is patentably distinct over all the prior art references under 35 U.S.C. 103, whether these references are considered singly or in any combination thereof. Claims 1-3 have been canceled without prejudice, and have been rewritten as new claims 4-6. The Applicants believe that these claims are now in condition for allowance. Early allowance of the claims and the application based upon the merits of these claims is respectfully requested.

PETITION UNDER RULE 136(a) AND RULE 17(c)

Applicants petition the Commissioner of Patents and Trademarks, under Rule 136(a), to extend the time for response to the Office Action dated November 9, 1994, for three months, from February 9, 1995, to May 9, 1995. Submitted herewith, under Rule 17(c), is a check in the amount of \$435.00 to cover the cost of the extension for a Small Entity. The Commissioner is hereby

authorized to charge any additionally required fee, or to credit any overpayment, to our Deposit Account No. 03-2468.

Respectfully submitted,

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May 8, 1995

Enclosures:

1. Two sheets of drawings with encompassing FIGS. 1-3
2. Petition for a three month extension of time
3. Check in the amount of \$435

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: COMMISSIONER OF PATENTS AND TRADEMARKS, Washington, D.C. 20231, on May 8, 1995.

Date: May 8, 1995



Maureen Bitz